

ABSTRACT

Relatively extensive deposits of porcellanite occur in Trinidad, and hitherto, no satisfactory use has been made of it. The project investigates the pozzolanic properties of the material in combination with lime and ordinary portland cement, using compressive strength values as an index of its potential use. Additions of bagasse (crushed) in varying amounts were made to determine how much could be tolerated in a porcellanite-based block. It was found that an optimum porcellanite/lime ratio existed, but compressive strength values of portland cement decreased with increased porcellanite content. Sugar was found to affect the hydration reactions, so that prior to any bagasse addition, sufficient washing had to be performed to ensure maximum removal of residual sugar. The action of varying amounts of sugar was demonstrated by using sugar solutions of differing concentrations in preparing specimen cubes. It was shown that minute amounts of sugar, especially in the presence of water, hinder the reactions of hardening and setting, and that the effect increases with increased sugar content.

Generally, the results indicate that porcellanite-based blocks could find applications for non-load bearing walls in particular, although better results could be obtained with portland cement rather than lime. The product was found to be light-weight, but the vast absorptive capacity for water necessitates adequate water protection in the form of paints or similar applications. A feasibility survey for a proposed factory to produce porcellanite type blocks showed that provided a large plant is contemplated, the product

could fetch a highly competitive price, in fact, one which is considerably lower than those presently available. Several drawbacks, however, as those of low compressive strengths and high water absorption as pointed out earlier, restrict its possible utilization.